UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604

Date: March 5, 2004

From: Milt Clark, Ph.D.
Health and Science Advisor

To: Kevin Adler
Remedial Project Manager

Subject: Review of TEC/BSI documents on Biological Treatment of Waukegan Sediments

Per your request I have reviewed a February 13, 2004 and March 3, 2004 document concerning biological treatment of Waukegan Harbor sediments containing low-level PCBs. The technical approach taken by TEC/BCI is highly flawed and in no manner indicates successful biological treatment of PCBs. Futhermore, the literature clearly indicates that there is not significant reduction in PCB concentration or toxicity when PCB concentrations are the low ppm range found in Waukegan Harbor sediment.

Some of my concerns include:

Contrary to assertions, extensive literature reviews clearly indicate that PCBs are known to volatilize at ambient temperatures. The researchers' statement that volatilization is unlikely at 30 degrees C and therefore no air testing was needed demonstrates either a profound lack of understanding of PCB behavior or an attempt to obscure the results of their study. PCBs can and do volatilize from sediments at ambient temperatures in a substantial amount.

Experimental conditions were not similar to treatments versus the control. The biological experiments were conducted at temperatures up to 34.6 degrees C, while the controls were kept at 20.4 C, which is at least a 10-degree C difference! The rate of volatilization significantly increases with a 10-degree C increase in temperature. In addition, they admit that there was a 70% reduction in PCBs in the experimental controls by addition of compost materials, while it is unclear if any similar dilution was conducted on the negative control.

In my opinion, the authors have shown that the more you heat the PCB-impacted sediments and the more you dilute them, less PCBs will result! There is absolutely no excuse not to have the methodology for the control batch and the treatment batches being identical. This is a basic scientific principle. Thus, it leads me to the conclusion that the individuals that conducted the research are either complete novices in terms of PCBs and their properties or are hoping that no one catches this apparent deception.

Lastly, even if the air stripping/dilution process would work, the cost of safely handling the sediment and treating it in mixed vats would be higher than transportating it to a landfill for disposal. It is interesting to me that TEC/BSI provided an incomplete cost estimate regarding the receiving and transport of sediments to seemingly obscure this fact.

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